reported cloudy and threatening weather, with long e. sea-swell. The s. s. "Edith Godden," which arrived at New York October 24th from Jamaica, reported having encountered heavy ne. gales between N. 35° and Barnegat. On the 23d the the wind shifted from ne. and e. to se. and s., which indicated that the storm-centre was moving westward; the barometric observations and wind force reported, however, do not show that the depression attained any great depth, or that it displayed unusual storm-energy. The ship "Hedwig," in N. 34° 26′, W. 74° 30′, reported barometer 30.02 (762.5), wind sse., force 3, long ene. swell, and the s. s. "D. J. Foley," in N. 32° 36′, W. 75° 04′, barometer 30.00 (762.0), wind se., force 2. During the 23d and 24th moderate to strong ne. gales prevailed off the New England coast. The disturbance appears to have recurved when between N. 34° and 35°; the ship "Hedwig," on the 24th, in N. 35° 32′, W. 73° 14′, reporting barometer 29.97 (761.2), wind nw. by n., force 5, squally; the s. s. "D. J. Foley" also reported, N. 35° 00′, W. 74° 40′, barometer 29.95 (760.7), wind nne., force 4. During the day the depression moved northeastward, and on the 25th it was central apparently at some distance to the south or southeast of Nova Scotia, the pressure ranging from 29.6 (751.8) to 29.7 (754.4). During the 26th the depression moved northeastward, and by the 27th it was central near N. 50°, W. 30°. Captain Vogelgesang of the s. s. "Rhaetia," in N. 50° 41′, W. 29° 20′, reported as follows: "Light wind shifting to se. with rain, squally at times, westerly sea decreasing, southerly sea increasing. The wind increased in force and went around to w., with heavy rain and heavy northerly sea-swell making up; at 12.45 p. m. the wind suddenly hauled to north, increasing to a hurricane, sky immediately clearing." The following observations were taken during the gale:

Time.	Barometer corrected.		Temperature.		Wind.	
	Inches.	Mill.	Fah.	Cent.	Dir.	Force (0–10)
			°	°		
October 27, 1.00 a. m.	29.82	757.4	50	10.0	wsw	4
" 4.00 a. m.	29.72	754.9	51	10.6	sso.	4-5
" 8.00 a. m.	29.48	758.9	53	11.7	sso.-s.	6
" 12.00 noon	29.06	738.0	55	12.8	wsw.	6
" 12.05 p. m.	29.03	737.4	55	12.8	w.	6
" 1.00 p. m.	29.06	738.2	51	10.6	n.	10
" 2.00 p. m.	29.07	738.4	50	10.0	n.	10
" 4.00 p. m.	29.32	744.8	50	10.0	n by w	9
" 8.00 p. m.	29.55	750.6	48	8.9	nnw.	8
" 12.00 midnight	29.08	753.8	47	8.3	nw.	6-7

On the 28th the region of least pressure was near the fifty-fifth parallel and about W. 20°, in which region moderate to strong westerly to southerly gales were reported, barometer ranging from 29.45 (748.0) to 29.65 (773.1). On the following day the depression either filled up or passed beyond the limit of observation.

VI.—This was probably a continuation of the depression charted as low-area viii. It passed off the New England coast, accompanied by strong gales, on the 26th, and on the 27th it was central southeast of Nova Scotia. Captain Cochrane, of the s. s. "The Queen," reported: "At 3 p. m., of the 26th, the barometer began to fall rapidly and the wind increased to a strong gale from ese., with heavy rain; at 11 p. m., barometer at its lowest 29.47 (748.5), when the rain cleared off and the wind fell light from s. At 2 a. m., of the 27th, it came out from wsw. and then hauled to nw., thence at 8 a. m., to nne., barometer rising rapidly." (Ship's position at 8 a. m., of 27th, N. 41° 52′, W. 60° 48′). The disturbance moved eastward during the 27th, and by the following day the region of least pressure was shown in N. 45°, W. 48°. The s. s. "Gellert," in N. 45° 37′, W. 47° 50′ reported barometer 29.43, (747.5,) wind ene., force 5, cloudy. Vessels in the northwest quadrant of the depression reported strong ne. and n. gales, barometer ranging from 29.5 (749.3) to 29.6 (751.8). On the 29th vessels between W. 25° and 30° and near the fiftieth parallel reported strong s. and se. gales. Captain Inch, of the s. s. "Nessmore," in N. 50° 55′, W. 27° 20′, reported barometer 29.53 (750.0); 6 a. m. strong breeze from se., barometer falling until 6 p. m., when the wind blew a violent gale from se., force 9, with very high sea; 4 a. m. of the 30th, wind light and variable; 8 a. m., heavy wnw. gale and high cross sea. Strong nw. gales prevailed over the region west of the fortieth meridian. On the 30th the storm-centre was near N. 52°, W. 25°. On that date the s. s. "Wisconsin," in N. 51° 11,′ W. 24° 07′, reported barometer 29.41 (747.0), wind s., force 7, cloudy; and the s. s. "British Prince," in N. 51° 23′, W. 31° 26′, barometer 29.56 (750.8), wind wsw., force 8, squally. By the 31st the atmospheric pressure had greatly increased over the region east of 35° west longitude, but it had decreased to the westward of that meridian, owing to the advance of depression vii; strong westerly gales continued, however, in the region between N. 50° and 55°, and W. 35° and 20°.

VII.—This is a continuation of a deep depression of great energy which passed over the Maritime Provinces into the Atlantic on the 30th. On the 31st the disturbance was central east of Newfoundland, causing strong s. and sw. gales as far eastward as the fortieth meridian. Captain Gleadell, of the s. s. "Celtic," between N. 45° 11′, W. 53° 07′, and N. 43° 26′, W. 58° 11′, reports: "4 a. m., 30th, barometer standing at 30.23 (767.8), light w. breeze; from that time the barometer began to fall rapidly and the wind freshened. At noon the barometer had fallen to 29.95 (760.7), fresh s. breeze and rain; 6 p. m., barometer 29.38 (746.2), being the lowest reading; the wind had now freshened to a strong s. gale, with high confused sea. From 6 p. m. the barometer began to rise and the wind to moderate, and by noon of the 31st, it had moderated to a fresh breeze from wnw., barometer 29.92 (760.0)." A continuation of this depression will probably appear on the chart for November.

TEMPERATURE OF THE AIR.

[*Expressed in degrees, Fahrenheit.*]

The distribution of mean temperature over the United States and Canada for the month of October, 1883, is exhibited on chart iii. by the dotted isothermal lines.

In the first column of the following table are shown the normal temperatures of October in the several districts, as determined from the Signal Service records; the second column shows the mean temperature of October, 1883, and the third column shows the departures of October, 1883, from the normal:

Average Temperatures for October, 1883.

Districts.	Average for October, Signal-Service observations.		Comparison of Oct., 1883, with the average for several years.
	For several years.	For 1883.	
	°	°	°
New England	52.8	49.2	3.6 below.
Middle Atlantic states	58.2	57.0	1.2 below.
South Atlantic states	65.0	66.9	1.9 above.
Florida peninsula	73.9	76.7	2.8 above.
Eastern Gulf	95.6	69.7	4.1 above.
Western Gulf	67.3	70.9	3.6 above.
Rio Grande valley	73.6	78.8	5.2 above.
Tennessee	60.8	63.7	2.9 above.
Ohio valley	57.4	57.0	0.4 below.
Lower lakes	51.7	49.3	2.4 below.
Upper lakes	48.2	45.6	2.6 below.
Extreme northwest	42.7	40.1	2.6 below.
Upper Mississippi valley	54.1	51.1	3.0 below.
Missouri valley	51.5	47.8	3.7 below.
Northern slope	44.6	41.0	3.6 below.
Middle slope	53.6	51.0	2.6 below.
Southern slope	63.3	64.5	1.2 above.
Northern plateau	48.4	46.8	1.6 below.
Southern plateau	61.3	58.0	3.3 below.
North Pacific	50.7	49.8	0.9 below.
Middle Pacific	59.2	57.7	1.5 below.
South Pacific	66.1	63.1	3.0 below.
Mount Washington, N. H.	30.6	29.3	1.3 below.
Pike's Peak, Colo.	21.5	16.4	5.1 below.
Salt Lake City, Utah	52.2	46.1	6.1 below.

In Tennessee, Florida, the Rio Grande valley, the south Atlantic and Gulf states, the mean temperature has been above the normal for October. The departures above the normal have averaged about 4°.3 in the Rio Grande valley and Gulf states, and about 2°.5 in Tennessee, Florida, and the south At-

lantic states. In all other sections of the country the mean temperature has been below the normal. The departures have been least in the Ohio valley and the north Pacific coast region, where they were less than 1°. In the Missouri valley, New England, the northern slope, southern plateau, upper Mississippi valley, and in southern California, the departures below the normal temperature have varied from 3° in the two last-named districts to 3°.7 in the Missouri valley. At Salt Lake City, Utah, and on the summit of Pike's Peak, Colorado, the mean temperatures were 6°.1 and 5°.1, respectively, below the average.

The general distribution of mean temperature, with the districts of maximum departures from the normal, for the month of October in each year from 1873 to 1882, inclusive, are as follows:

Districts.	Maximum departures.	Year.	Remarks.
	°		
New England	+ 1.3	1873	Above the normal in New England; normal in the Ohio valley; below the normal in all other districts east of the Rocky mountains.
Upper Mississippi valley	— 5.0		
Minnesota	— 4.5		
Upper lakes	— 2.4		
Minnesota	+ 3.0	1874	Normal in the middle and south Atlantic states, and on the Pacific coast; above the normal in all other districts.
Upper Mississippi valley	+ 2.9		
Missouri valley	+ 2.8		
Ohio valley	+ 2.6		
Saint Lawrence valley	— 4.6	1875	Below the normal in all districts east of the Rocky mountains; above the normal on the Pacific coast.
South Atlantic states	— 3.7		
Upper lakes	— 3.5		
Pacific coast	+ 2.8		
South Atlantic states	— 4.2	1876	Below the normal in all districts east of the Rocky mountains; above the normal on the Pacific coast.
Minnesota	— 4.0		
Saint Lawrence valley	— 3.9		
Pacific coast	+ 1.2		
Lower lakes	+ 4.6	1877	Below the normal in the upper Missouri valley, at the Rocky mountain stations, and on the Pacific coast; above the normal over the districts east of the one-hundredth meridian.
Ohio valley and Tennessee	+ 4.3		
Middle Atlantic states	+ 4.1		
Rocky mountain stations	— 5.0		
Pacific coast	— 1.2		
New England	+ 4.8	1878	Below the normal in Minnesota, the upper Missouri valley, and on the Pacific coast; above the normal in the west Gulf states, lower Missouri valley, and in all districts east of the Mississippi river.
Saint Lawrence valley	+ 4.8		
Lower lakes	+ 4.3		
Pacific coast	— 1.9		
Minnesota	— 1.1		
Upper Mississippi valley	+ 9.4	1879	Below the normal on the Pacific coast; above the normal in all districts east of the Rocky mountains.
Upper lakes	+ 9.1		
Ohio valley and Tennessee	+ 9.1		
Olympia, Washington	— 3.9		
Boisé City, Idaho	— 3.0		
Saint Lawrence valley	+ 1.0	1880	Normal in the states east of the Mississippi river south of the Ohio valley, in the northern plateau, and in the north and middle Pacific coast regions; below the normal in the lake region, in the southern plateau, southern California, and from the Rocky mountains eastward to the Mississippi river; above the normal in the Saint Lawrence valley.
Rio Grande valley	— 4.0		
Southern slope	— 3.7		
Middle slope	— 3.2		
Lower Missouri valley	— 2.8		
Eastern Gulf	+ 6.5	1881	Below the normal west of the Rocky mountains, in the northern slope, in the Missouri valley, and in Minnesota; above the normal in all other districts.
Ohio valley	+ 6.3		
South Atlantic states	+ 6.1		
Northern slope	— 6.8		
Middle Pacific coast	— 5.4		
Upper lakes	+ 4.8	1882	Below the normal in the northern and southern slopes, and west of the Rocky mountains; above the normal in all other districts.
Upper Mississippi valley	+ 4.8		
Tennessee	+ 4.7		
Middle plateau	— 6.9		
Southern plateau	— 3.6		
Northern plateau	— 3.1		

The following are some of the highest and lowest monthly mean temperatures reported from the Signal Service stations:

Stations reporting highest.	°	Stations reporting lowest.	°
Key West, Florida	79.5	Pike's Peak, Colorado	16.4
Rio Grande City, Texas	79.1	Mount Washington, New Hampshire	29.3
Brownsville, Texas	78.5	Fort Shaw, Montana	36.4
Galveston, Texas	76.9	Saint Vincent, Minnesota	37.3
Indianola, Texas	76.8	Helena, Montana	38.3
Cedar Keys, Florida	76.3	Fort Assininiboine, Montana	38.9
Sanford, Florida	75.3	Fort Buford, Dakota	38.9
Mobile, Alabama	73.3	Cheyenne, Wyoming	39.3
Pensacola, Florida	73.2	Moorhead, Minnesota	40.0
Montgomery, Alabama	71.2	Fort Benton, Montana	41.1

DEVIATIONS FROM MEAN TEMPERATURE.

The departures exhibited by the reports from the regular Signal Service stations are shown in the table of average temperatures for October, 1883. Voluntary observers report the following notes in connection with this subject:

Arkansas.—Lead Hill, Boone county: mean temperature, 61°.3, is 3°.2 below the October average of the last two years.

Connecticut.—Southington, Hartford county: mean temperature, 46°.3, is about 5° below the October normal of thirteen years and is the lowest October mean for that period; it is also the lowest October mean that has occurred since 1854, with the exception of 45°.9 in October, 1864. The monthly range of temperature, 60°, has been exceeded but once in October during the last thirteen years, viz: 64° in 1881.

Illinois.—Riley, McHenry county: mean temperature, 46°.1, is 1°.2 below the October average of twenty-three years.

Anna, Union county: mean temperature, 61°.2, is about 1° above the October average of the last eight years.

Mattoon, Coles county: mean temperature, 54°, is about the October normal of the last four years.

Indiana.—Logansport, Cass county: mean temperature, 53°.8, is 0°.8 above the October average of the last twenty-four years. The highest October mean temperature of that period, 59°.5, occurred in 1881; the lowest, 42°.5, occurred in 1869. The extremes for October, 1883, are: maximum, 85°, on the 9th; minimum, 34°, on the 3d, 4th, 16th, and 17th. The maximum for October of the last twenty-four years, 92°, occurred in 1879, and the minimum for October for the same period, 12°, occurred in 1869.

Wabash, Wabash county: mean temperature, 51°.2, is 3°.5 below the October average of eight years.

Vevay, Switzerland county: mean temperature, 59°.14, is 2°.94 above the October average of the last twenty years. The maximum temperature for October, 1883 (85°), is within a fraction of the average for October, while the minimum (38°), is 6°.9 above the average.

Kansas.—Independence, Montgomery county: mean temperature, 56°.4, is 2°.6 below the October average of the last twelve years. The highest October mean of that period, 63°, occurred in 1881; the lowest, 54°.8, occurred in 1875.

Yates Centre, Woodson county: mean temperature, 54°.5, is 0°.2 below the October mean of the last three years.

Wellington, Sumner county: mean temperature, 53°.3, is 4°.1 below the October average of the four preceding years.

Lawrence, Douglas county: mean temperature, 52°.7, is 2°.03 below the October mean of sixteen years.

Maine.—Gardiner, Kennebec county: mean temperature, 44°.5, is 2°.8 below the October average of forty-seven years, and is, with one exception, (42°.8 in 1859,) the lowest October mean of that period.

Maryland.—Fallston, Harford county: mean temperature, 54°.5, is 1° below the October average of thirteen years.

New Jersey.—South Orange, Essex county: mean temperature, 52°.3, is 1° below the October average of the last fourteen years.

New York.—North Volney, Oswego county: mean temperature, 47°.2, is 1°.8 below the October average of sixteen years.

Palermo, Oswego county: mean temperature, 44°.9, is 2°.1 below the October average of the last thirty years.

Ohio.—Wauseon, Fulton county: mean temperature, 48°.7, is 3°.7 below the October average of the last thirteen years. During that period the highest October mean temperature, 59°.0, occurred in 1875; the lowest, 46°.0, occurred in 1875. The October extremes for the same period are: maximum, 87°, in 1879; minimum, 12°, in 1874.

Pennsylvania.—Dyberry, Wayne county: mean temperature, 45°.6, is 1°.2 below the October average of the last sixteen years.

Texas.—New Ulm, Austin county: mean temperature, 72°.9, is 2°.6 above the October mean of twelve years.

Vermont.—Woodstock, Windsor county: mean temperature, 42°.2, is 2°.46 below the October average of the last sixteen years.

Virginia.—Variety Mills, Nelson county: mean temperature, 56°.1, is 2°.5 below the October average of the last six years.

Wytheville, Wythe county: mean temperature, 56°.0, is 2°.4 above the October average of nineteen years.

West Virginia.—Helvetia, Randolph county: mean temperature, 56°.6, is 4°.5 above the October average of seven years.

MONTHLY RANGES OF TEMPERATURE.

The monthly ranges of temperature have been greatest in the upper Missouri valley and middle slope; they have been least in Florida, on the North Carolina coast, at San Francisco, California, and on the north Pacific coast. The smallest monthly ranges of temperature, 20°, were reported from Key West, Florida, and Fort Canby, Washington territory; and the largest, 68°, was reported from West Las Animas, Colorado. Monthly ranges of 55° or more have been reported as follows: Cheyenne, Wyoming, 67°; Fort Bennett, Dakota, and San Carlos, Arizona, 63°; Phœnix, Arizona, 62°; El Paso, Texas, 61°; Camp Thomas, Arizona, and Fort Buford and Yankton, Dakota, 60°; Fort Sully, Dakota, 59°; Fort Elliott, Texas, and Saint Vincent, Minnesota, 58°; Fort Spokane, Washington Territory, and Fort Apache, Arizona, 56°; and 55° from the following stations: Fort Shaw, Montana; Fort Meade and Huron, Dakota; Omaha, Nebraska; Fort Smith, Arkansas. Monthly ranges of 30° or less were reported as follows: Cape Mendocino, California, and Sloop Point, North Carolina, 22°; Thatcher's Island, Massachusetts, 23°; San Francisco, California, 26°; Portland, Oregon, 27°; Cedar Keys, Florida, 28°; Olympia, Washington Territory, 29°; and 30° at the following stations: Hatteras, Fort Macon, and Portsmouth, North Carolina, and Sanford, Florida.

GREATEST DAILY RANGES OF TEMPERATURE.

The greatest daily ranges of temperature have varied in the several districts as follows:

New England.—From 17° at Eastport, Maine, on the 6th, to 33° at New Haven, Connecticut, on the 11th, and on the summit of Mount Washington, New Hampshire, on the 14th.

Middle Atlantic states.—From 19° at Barnegat City, New Jersey, on the 2d, to 30° at Washington, District of Columbia, on the 11th.

South Atlantic states.—From 16° at Fort Macon and Hatteras, North Carolina, on the 10th and 31st, respectively, to 29° at Augusta, Georgia, on the 11th.

Florida peninsula.—From 13° at Key West, on the 2d, to 20° at Sanford, on the 11th.

Eastern Gulf.—From 24° at Pensacola, Florida, on the 11th, to 29° at Montgomery, Alabama, on the same date.

Western gulf.—From 18° at Indianola, Texas, on the 13th, to 39° at Fort Smith, Arkansas, on the 30th.

Rio Grande valley.—From 24° at Brownsville, Texas, on the 26th, to 33° at Rio Grande, Texas, on the 30th.

Tennessee.—From 25° at Chattanooga, on the 31st, to 30° at Nashville, on the 8th.

Table of Comparative Maximum Temperatures for the Month of October.

State or Territory.	Maximum for October, 1883, Signal Service.		Maximum since Signal-Service stations were opened—3 to 12 years.			Highest from any other source.			
	Station.	Temp.	Station.	Temp.	Year.	Place.	Temp.	Year.	Length of Record.
		°		°			°		
Alabama	Montgomery	95	Montgomery	92	1881	Mount Vernon Arsenal	96		31 years.
Arizona	Phœnix	96	Stanwix	103	1876	Fort McDowell	108		15 "
Arkansas	Fort Smith	94	Little Rock	90	1881	Fort Smith	91		21 "
California	Los Angeles	83	Los Angeles	98.5	1879	Fort Yuma	105		31 "
Colorado	West Las Animas	86	Denver	86	1873	Fort Lyon	92		19 "
Connecticut	New Haven	79	New Haven	86	1881	Columbia	88		9 "
Do	New London	70	New London	83	1879	New Haven	83		87 "
Dakota	Fort Bennett	83	Fort Buford	95	1879	Fort Buford	96		9 "
Delaware	Delaware Breakwater	79	Delaware Breakwater	84	1881	Fort Delaware	88		44 "
District of Columbia	Washington	84	Washington	92.3	1881	Washington	90		48 "
Florida	Jacksonville	92	Key West	92	1876	Fort King	99		10 "
Georgia	Augusta	92	Augusta	90	1881	Augusta Arsenal	92		48 "
Idaho	Fort Lapwai	72	Boisé City	85	'79, '80	Fort Boisé	95		16 "
Illinois	Cairo	85	Cairo	88	1881	Chicago	90		37 "
Indiana	Indianapolis	81	Indianapolis	86	1879	Vevay	96		15 "
Indian Territory			Fort Sill	91	1878	Fort Sill	96		10 "
Do			Fort Gibson	89	1879	Fort Gibson	95		52 "
Iowa	Dubuque	85	Keokuk	87	1879	Muscatine	87		27 "
Kansas	Leavenworth	85	Dodge City	89	1881	Fort Larned	98		14 "
Do			Leavenworth	89	1874	Fort Leavenworth	94		50 "
Kentucky	Louisville	86	Louisville	88	1879	Chilesburg	88		3 "
Do						Newport Barracks	85		27 "
Louisiana			Shreveport	94	1881	Baton Rouge	91		52 "
Maine	Portland	78	Portland	83	'73, '81	Brunswick	88		53 "
Maryland	Baltimore	82	Baltimore	89	'79, '81	Fort Washington	92		37 "
Massachusetts	Boston	80	Boston	90	1881	Topsfield	87		5 "
Do	Provincetown	73	Springfield	86	1881	Williamstown	85		55 "
Michigan	Port Huron	79	Marquette	87	1879	Monroe	89		10 "
Do	Detroit	78	Port Huron	86	1879	Ontonagon	89		11 "
Minnesota	Saint Paul	75	Breckenridge	89	1879	Fort Snelling	90		61 "
Mississippi	Vicksburg	93	Vicksburg	91	'78, '79	Vicksburg	90		4 "
Missouri	Saint Louis	86	Saint Louis	90	1879	Allenton	100		4 "
Montana	Helena	68	Fort Custer	87	1879	Fort Shaw	91		8 "
Nebraska	North Platte	83	North Platte	89	1879	Fort McPherson	102		14 "
Nevada			Winnemucca	84	1879	Fort Ruby	101		6 "
New Hampshire	Mount Washington	54	Mount Washington	58	1882	Auburn	88		6 "
Do						Fort Constitution	79		33 "
New Jersey	Barnegat	77	Sandy Hook	87	1881	Vineland	92		7 "
New Mexico			La Mesilla	96	1878	Fort Cummings	106		4 "
New York	Oswego	83	New York City	88.3	1882	Poughkeepsie	95		21 "
North Carolina	Wilmington	90	Cape Hatteras	90	1881	Fort Johnson	90		54 "
Do			Kittyhawk	90	1881				"
Ohio	Sandusky	85	Cincinnati	86	1879	College Hill	90		56 "
Do	Columbus	84	Columbus	86	1879	Cincinnati	90		36 "
Oregon	Roseburg	65	Umatilla	86.5	1880	Fort Dallas	100		16 "
Pennsylvania	Pittsburg	85	Philadelphia	87	'79, '81	Philadelphia	88		113 "
Do	Erie and Philadelphia	82	Pittsburg	91	1879	Carlisle Barracks	89		34 "
Rhode Island	Narragansett Pier	75	Newport	81.5	1879	Providence	85		35 "
South Carolina	Charleston	93	Charleston	89	1881	Charleston	89		104 "
Tennessee	Memphis	88	Memphis	92	1879	Humboldt	88		4 "
Texas	Rio Grande City	100	Rio Grande City and Uvalde	105	1877	Fort McIntosh	104		25 "
Utah	Salt Lake City	66	Salt Lake City	83	1870	Fort Douglass	99		18 "
Vermont			Burlington	78	1879	Lunenburg	84		15 "
Virginia	Cape Henry	89	Fort Myer	90	1879	Fortress Monroe	89		54 "
Washington	Fort Spokane	77	Dayton	92	1880	Fort Walla Walla	88		10 "
West Virginia			Morgantown	85	1879	Helvetia	86		4 "
Wisconsin	La Crosse	80	La Crosse and Madison	84	1879	Fort Crawford	86		25 "
Wyoming	Cheyenne	73	Cheyenne	80	'73, '74, '79	Fort Laramie	90		25 "

Ohio valley.—From 20° at Cincinnati, Ohio, on the 9th and 14th, to 34° at Pittsburg, Pennsylvania, on the 9th.

Lower lakes.—From 22° at Detroit, Michigan, on the 1st, and at Toledo, Ohio, on the 28th, to 28° at Cleveland, Ohio, on the 9th.

Upper lakes.—From 22° at Milwaukee, Wisconsin, on the 8th, to 33° at Alpena, Michigan, on the 19th.

Extreme northwest.—From 36° at Saint Vincent, Minnesota, on the 3d and 4th, to 45° at Fort Buford, Dakota, on the 3d.

Upper Mississippi valley.—From 20° at La Crosse Wisconsin, on the 8th, to 26° on the same date at Saint Louis, Missouri,

Table of Maximum and Minimum Temperatures for October, 1883.

State or Territory.	Signal Service.			U. S. Army Post Surgeons, or Voluntary Observers.		
	Station.	Max.	Min.	Station.	Max.	Min.
		°	°		°	°
Alabama	Montgomery	95	43	State Line	100	37
Do	Mobile	91	46	Calera	96	29
Arizona	Phœnix	96	34	Fort Bowie	85	34
Do	San Carlos	93	30			
Arkansas	Fort Smith	94	39	Madison	96	40
Do	Little Rock	90	45	Brinkley	91	20
California	Los Angeles	83	44	Whitewater	104	45
Do	Red Bluff	79	40	Cisco	64	26
Colorado	West Las Animas	86	9	Fort Lyon	86	20
Do	Pike's Peak	33	— 5	Fort Lewis	73	7
Connecticut	New Haven	79	28	Southington	82	22
Do	New London	70	27			
Dakota	Fort Bennett	83	20	Fort Yates	78	11
Do	Fort Buford	74	14	Fort Buford	73	—17
Delaware	Del. Breakwater	79	40			
District of Columbia	Washington	84	36	Rock Creek Bridge	86	41
Florida	Jacksonville	92	59	Live Oak	96	50
Do	Pensacola	88	48	Newport	92	54
Georgia	Augusta	92	49	Madison	96	40
Do	Atlanta	86	44	Andersonville	99	54
Idaho	Fort Lapwai	72	23	Fort Lapwai	71	25
Illinois	Cairo	85	38	Anna	88	37
Do	Springfield	83	34	Polo	78	27
Indiana	Indianapolis	81	35	Logansport	85	34
Do				Griffin Station	81	30
Iowa	Dubuque	85	31	Guttenburg	88	24
Do	Des Moines	80	28	Humboldt	77	20
Kansas	Leavenworth	85	34	Yates Centre	90	28
Do				Topeka	86	25
Kentucky	Louisville	86	41	Frankfort	84	40
Louisiana				Franklin	97	46
Do				Coushatta	94	42
Maine	Eastport	63	29	Orono	75	19
Do	Portland	78	29	Gardiner	71	18
Maryland	Baltimore	82	40	Fallston	81	31
Do				Emmittsburg	80	28
Massachusetts	Boston	80	29	Taunton	88	21
Do				Rowe	76	18
Michigan	Port Huron	79	30	Hillsdale	80	26
Do	Marquette	66	24	Traverse City	68	24
Minnesota	Saint Paul	75	25	Northfield	78	19
Do	Saint Vincent	69	11	Minneapolis	74	19
Mississippi	Vicksburg	93	44	Okolona	99	35
Missouri	Saint Louis	86	35	Bolivar	98	40
Do				Oregon	85	38
Montana	Helena	68	23	Fort Ellis	73	10
Do	Fort Shaw	60	5	Fort Keogh	75	15
Nebraska	North Platte	83	29	Lincoln	89	30
Do	Omaha	81	20	Genoa	78	20
Nevada				Brown's	78	38
Do				Boca	68	12
New Hampshire	Mount Washington	54	6	Grafton	72	17
New Jersey	Barnegat	77	39	Paterson	85	34
Do	Little Egg Harbor	75	36	Freehold	80	29
New Mexico				Deming	86	50
Do				Lordsburg	80	38
New York	Oswego	83	32	Mountainville	83	20
Do	Rochester	79	27	Friendship	82	17
North Carolina	Wilmington	90	48	Highlands	78	36
Do	Wash Woods	89	40	Chapel Hill	92	42
Ohio	Sandusky	85	38	Canal Dover	94	32
Do	Toledo and Cleveland	83	34	Wauseon	85	26
Oregon	Roseburg	65	32	Albany	65	29
Do	Portland	64	37	Fort Klamath	70	9
Pennsylvania	Pittsburg	86	34	Germantown	82	33
Do	Erie	82	36	Dyberry	72	18
Rhode Island	Block Island	71	39			
Do	Narragansett Pier	75	29			
South Carolina	Charleston	93	53	Georges	95	38
Do				Saint Matthews	93	36
Tennessee	Memphis	88	44	Milan	89	40
Do	Knoxville	84	40	Marion	87	25
Texas	Rio Grande City	100	50	Cuero	96	49
Do	Fort Elliott	86	28	Tyler	95	40
Utah	Salt Lake City	66	28	Kelton	74	25
Do				Promontory	65	21
Vermont				Woodstock	77	14
Virginia	Cape Henry	89	48	Snowville	80	34
Do	Fort Myer	81	37	Wytheville	90	34
Washington	Fort Spokane	77	21	Fort Spokane	74	22
Do	Dayton	66	22			
West Virginia				Helvetia	82	40
Wisconsin	Milwaukee	78	31	Lancaster	84	22
Do	La Crosse	80	27	Neillsville	80	19
Wyoming	Cheyenne	73	7	Fort Bridger	68	11

and Springfield, Illinois, and on the 1st, at Saint Paul, Minnesota, and Dubuque, Iowa.

Missouri valley.—From 26° at Omaha, Nebraska, on the 6th, to 50° at Fort Bennett, Dakota, on the same date.

Northern slope.—From 25° at Helena, Montana, on the 4th, to 38° at Cheyenne, Wyoming, on the 6th.

Middle slope.—From 21° on the summit of Pike's Peak, Colorado, on the 29th, to 46° at West Las Animas, Colorado, on the 6th.

Southren slope.—From 38° at Fort Davis, Texas, on the 13th and 19th, and at Fort Concho, Texas, on the 30th, to 48° at Fort Stockton, Texas, on the 30th.

Southern plateau.—From 28° at Fort Grant, Arizona, on the 9th, to 48° at Fort Apache, Arizon, on the 31st.

Middle plateau.—27° at Salt Lake City, Utah, on the 24th.

Northern plateau.—From 29° at Lewiston, Idaho, on the 15th, to 38° at Dayton, Washington Territory, on the 7th.

North Pacific coast.—From 17° at Fort Canby, Washington Territory, on the 22d, to 29° at Roseburg, Oregon, on the 15th.

Middle Pacific coast.—From 17° at Cape Mendocino, on the 22d, to 30° at Red Bluff, California, on the 21st.

South Pacific coast.—From 24° at San Diego, California, on the 9th, to 36° at Los Angeles, California, on the same date.

FROSTS.

Frosts occurred in the central and northern districts during October, as follows:

New England.—1st to 11th, 14th to 18th, 20th to 31st.

Middle Atlantic states.—1st to 6th, 8th to 11th, 15th to 18th, 21st to 25th, 27th, 31st.

Ohio valley.—4th, 15th, 16th, 17th, 21st, 22d, 23d, 27th, 31st.

Lower lakes.—1st, 3d to 8th, 15th to 19th, 21st, 22d, 25th, 27th, 28th.

Upper lakes.—1st to 5th, 7th, 8th, 10th, 11th, 14th to 17th, 19th to 27th, 30th, 31st.

Extreme northwest.—1st to 4th, 6th, 10th to 15th, 18th to 28th, 29th, 30th.

Upper Mississippi valley.—1st to 4th, 12th to 17th, 19th to 26th, 29th, 30th, 31st.

Missouri valley.—1st to 4th, 6th, 9th to 26th, 28th to 31st.

Northern slope.—3d, 6th, 9th to 14th, 16th to 31st.

Middle slope.—3d, 5th to 31st.

Southern plateau.—5th, 6th, 8th, 9th, 10th, 17th, 18th, 19th, 22d, 26th, 27th, 29th, 30th, 31st.

Middle plateau.—1st to 14th, 16th to 25th, 27th to 31st.

Northern plateau.—2d, 7th, 10th, 11th, 12th, 14th, 15th, 16th, 18th to 23d, 30th, 31st.

North Pacific coast.—5th, 6th, 11th, 14th, 15th, 16th, 20th to 23d, 30th, 31st.

In the southern states frosts were reported as follows:

Alabama.—Montgomery and Green Springs, 26th and 31st.

Arkansas.—Fort Smith, Lead Hill, Little Rock, and Mount Ida, on the 31st.

California.—Oakland and Princeton, 21st, 22d; Poway, 8th, 9th; Sacramento, 16th to 22d, 29th, 30th, 31st.

North Carolina.—Brevard, 30th, 31st; Chapel Hill, 31st.

Tennessee.—Milan, 30th.

Texas.—Palestine, 25th.

The following instances of damage by frost have been reported:

Dubuque, Iowa.—The heavy frost of the 1st killed vines and other vegetation.

Oswego, New York, 1st.—Great damage resulted from the frost of the 1st, in this part of the state. Ice formed to a thickness of one-fourth inch, and the ground froze sufficiently to bear a person's weight.

West Bend, Iowa.—Corn and other vegetation were killed by the frost of the 2d.

Northport, Michigan.—The heavy frost of the 5th killed all vegetation that escaped the earlier and lighter frosts.

Port Jervis, New York, 5th.—Minimum temperature of this date 20°; all crops not killed by the September frosts were

destroyed, and many grape-vines in Delaware valley were killed.

New Haven, Connecticut.—First killing frost on the 5th.

Ardenia, New York.—Vegetation was destroyed by the freezes of the 5th, 6th, and 10th.

Table Rock, Nebraska.—The first killing frost of the season at this place occurred on the 14th.

ICE.

The formation of ice in the various states and territories occurred as follows:

Colorado.—Uncompahgre, 11th, 20th, 21st, 22d; West Las Animas, 24th.

Connecticut.—Bethel, 4th, 5th, 6th, 16th, 17th, 18th, 25th; New London, 6th.

Dakota.—Alexandria, 13th, 20th, 26th; Fort Bennett, 2d; Fort Buford, 1st, 2d, 3d.

Idaho.—Fort Lapwai, 31st.

Illinois.—Riley, 1st.

Iowa.—Des Moines, 20th; Dubuque, 1st, 2d, 21st, 22d; Humboldt, 12th, 20th; Muscatine, 3d, 15th, 21st, 31st.

Kansas.—Holton, 25th; Manhattan, 20th; Pretty Prarie, 14th, 20th, 25th; Salina, 25th.

Maine.—Bangor, 1st, 2d, 4th; Eastport, 16th, 17th; Portland, 22d.

Massachusetts.—Fall River, 4th, 6th, 16th, 17th, 18th; Somerset, 5th, 17th, 18th.

Michigan.—Hudson, 22d; Ione, 3d, 4th, 15th, 16th, 21st; Lansing, 15th, 17th; Port Huron, 21st.

Minnesota.—Saint Paul, 20th; Saint Vincent, 1st, 2d, 3d.

Nebraska.—Genoa, 12th, 14th, 20th, 26th, 31st.

New Jersey.—Freehold, 5th; Somerville, 5th, 17th.

New York.—Albany, 4th, 5th, 17th, 18th; Ardenia, 5th, 6th, 10th; Factoryville, 1st, 4th, 5th, 16th, 17th, 18th, 21st, 22d; Humphrey, 4th, 5th; Menand station, (near Albany) 4th, 5th, 6th, 16th, 17th, 18th, 22d; Mountainville, 6th, 17th.

North Carolina.—Elk Knob, Watauga county, the temperature fell to 26° and ice formed at this place on the 31st.

Ohio.—Canal Dover, 17th; Margaretta, 17th, 27th; North Lewisburg, 16th; Wauseon, 17th, 23d.

Pennsylvania.—Chambersburg, 17th; Grampian Hills, 4th; Wilkes Barre, 6th, Quakertown, 4th.

Rhode Island.—Point Judith, 5th.

Utah.—Salt Lake City, 23d.

Vermont.—Strafford, 1st, 5th, 6th, 7th, 17th.

Wisconsin.—Embarrass, 1st, 15th; Milwaukee, 20th.

PRECIPITATION.

[*Expressed in inches and hundredths.*]

The distribution of rainfall over the United States and Canada for the month of October, 1883, as determined from reports from more than six hundred stations, is exhibited on chart iv.

The monthly precipitation has been deficient in the lake region, northern plateau, in the north Pacific coast region, Rio Grande valley, and in the south Atlantic and eastern Gulf states. The deficiencies in the south Atlantic and eastern Gulf states average about 1.45; in the Rio Grande valley the averages are determined from but two stations, and these show a deficiency of nearly three inches. In the northern plateau and north Pacific coast region deficiencies of 0.96 and 0.86, respectively, occur, while in the lake region they are less than 0.25. With the exception of the above-named districts, the average monthly rainfall has exceeded the October normal in all parts of the United States. From New England southwestward to Tennessee, excesses, varying from 2.06 in the middle Atlantic states to 3.71 in the Ohio valley, have occurred. Large excesses also occur in the Missouri and upper Mississippi valleys, west Gulf states, and over the eastern slope of the Rocky mountains. In the Florida peninsula a large excess (2.85) is shown, which is due principally to the unusually large rainfall at Key West. At that station the total rainfall for the month was 19.77 (of which amount 12.51 fell from the 19th to the 22d), or more than three times as great as the average for October for the last twelve years. The nearest approach to this unusually heavy precipitation, during October, since the establishment of this station, was 14.20 in 1879. In northern Florida and southwestern Georgia there was an almost entire absence of rain. At Cedar Keys the monthly rainfall was only 0.23, or a deficiency of 7.34 as compared with the average of the three preceding years, while at Newport, Wakulla county, no rain fell during the entire month except an inappreciable amount on the 29th.

The general distribution of rainfall for the month of October, with the districts of maximum departures from the normal in each year from 1873 to 1882, inclusive, are as follows:

Districts.	Maximum departures.	Year.	Remarks
		1873	Normal in the upper lake region and upper Mississippi valley; deficient in Minnesota, the Missouri valley, and in the south Atlantic and Gulf states; excessive in the lower lake region, New England, the middle Atlantic states, and in the Ohio and Saint Lawrence valleys.
Upper lakes	+ 0.50	1874	Normal in Minnesota; slightly excessive in the upper lake region and on the Pacific coast; deficient in all other districts.
Pacific coast	+ 0.30		
Western Gulf	− 3.85		
New England	− 3.10		
Middle Atlantic states	− 2.30		
Upper lakes	+ 2.25	1875	Normal in New England, the lower lake region, and in the south Atlantic states; excessive in the upper lake region, Saint Lawrence valley, and on the Pacific coast; deficient in the Gulf states, Minnesota, the upper Mississippi, Missouri, and Ohio valleys.
Pacific coast	+ 1.30		
Western Gulf	− 1.55		
Middle Atlantic states	− 1.40		
Missouri valley	− 1.40		
South Atlantic states	+ 5.15	1876	Normal in the lower lake region; excessive in the south Atlantic and east Gulf states, and on the Pacific coast; deficient in all other districts.
Pacific coast	+ 3.35		
Eastern Gulf	+ 1.75		
New England	− 2.35		
Middle Atlantic states	− 1.35		
Upper Mississippi valley	− 1.25		
Western Gulf	+ 5.88	1877	Slight deficiencies in the Saint Lawrence and Ohio valleys; excessive in all other districts.
Eastern Gulf	+ 3.83		
Middle Atlantic states	+ 3.80		
South Atlantic states	+ 3.51		
Saint Lawrence valley	− 0.20		
Minnesota	+ 2.35	1878	Normal in New England, the west Gulf states, and at Portland, Oregon; deficient in the Missouri valley; excessive in Minnesota, and in all districts east of the Mississippi river, except in New England.
Lower lakes	+ 2.02		
South Atlantic states	+ 1.45		
Lower Missouri valley	− 0.69		
Eastern Gulf	+ 3.18	1879	Excessive in Minnesota, the lower Missouri valley, south Atlantic and East Gulf states, and on the Pacific coast; deficient in the west Gulf states, Tennessee, and in the states east of the Mississippi, north of the thirty-fifth parallel.
South Atlantic states	+ 1.68		
Minnesota	+ 1.22		
New England	− 2.63		
Middle Atlantic states	− 2.23		
Lower lakes	− 1.80		
Florida	+ 3.36	1880	Normal in Minnesota; deficient in the middle Atlantic and west Gulf states, upper Missouri and upper Mississippi valleys, upper lake region, and on the Pacific coast; excessive in the lower Missouri valley, and in all districts east of the Mississippi, except in the middle Atlantic states.
South Atlantic states	+ 2.40		
Saint Lawrence valley	+ 1.59		
North Pacific coast	− 1.47		
Middle Pacific coast	− 0.76		
Upper Mississippi valley	− 0.73		
Upper Mississippi valley	+ 4.52	1881	Excessive over the whole country, except in New England, the south Atlantic states, and in Florida.
Western Gulf	+ 3.93		
Upper lakes	+ 3.24		
Florida	− 4.00		
South Atlantic states	− 1.80		
North Pacific coast	+ 4.25	1882	Excessive from the Mississippi river westward to the Pacific coast, except slight deficiencies in the Rio Grande valley, northern slope, and southern plateau; deficient in all districts east of the Mississippi, except in the south Atlantic states, Florida, and in the upper lake region.
Middle Pacific coast	+ 1.86		
South Atlantic states	+ 1.36		
Lower lakes	− 1.75		
Tennessee	− 1.45		

In the first column of the following table is given the average rainfall for October in the various districts for several years, as determined from observations made at the Signal Service stations; in the second column is given the average for October, 1883, and the third column shows the excess or de-